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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Sabine Meier

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LUCAS & MERCANTI, LLP  
475 PARK AVENUE SOUTH  
15TH FLOOR  
NEW YORK, NY 10016

EXAMINER

ZOLLINGER, NATHAN C

ART UNIT

PAPER NUMBER

3746

NOTIFICATION DATE

DELIVERY MODE

06/18/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

info@lmiplaw.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/549,968	<b>Applicant(s)</b> MEIER ET AL.	
	<b>Examiner</b> NATHAN ZOLLINGER	<b>Art Unit</b> 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 37-51, 54-70, 73 and 74 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 37-51, 54-70, 73 and 74 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)         | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

**Detailed Action**

***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 10, 2010 has been entered.

***Response to Amendment***

The amendment filed on March 9, 2010 has been entered. Claim 37 has been amended and claims 71-72 have been cancelled. Claims 73-74 have been newly added.

***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: "Oscillating piston pump with arrangement for inlet and outlet valves."

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37, 39-44, 63 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bachrach (US 2,359,819) in view of Jackson (US 1,243,299) and in further view of Suman (US 6,688,867).

**Claim 37:** Bachrach discloses a pump comprising at least one pump piston (25) moving on a circular path, and a pump housing (12), the pump piston optionally coupled in a rigid manner to one or more further pump pistons (26), moving in an oscillating manner about an axis of rotation on a path of movement correspondingly having two reversal positions; and furthermore a medium (col. 1, lines 1-5), optionally compressed or pressurized, being discharged via an outlet valve (32,38,44,50) and, in the course of movement from one reversal position into the other reversal position, an inlet valve (31,37,43,49) being opened; after which, in the course of a pressure buildup, the medium is discharged on a pressure side of the pump piston then obtained and taken in on a suction side of the pump piston then obtained, the inlet valve (49) and the outlet valve (50) are associated with the same end region of the path movement (Fig. 1). However, Bachrach does not disclose inlet/outlet valves formed in a common housing dividing wall. Jackson discloses a pump in which the inlet/outlet valves are formed in a common housing wall (Fig. 1). It would have been obvious at the time the invention was

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made to a person having ordinary skill in the art to employ interior valves as taught by Jackson into the pump of Bachrach in order to protect the valves from being damaged by and to make the entire pump assembly more compact. Bachrach also does not disclose coating the pump with a flocking in the surface area of an associated movement gap. Suman teaches a well-known concept of coating a pump with a flocking in the surface area of an associated movement gap (see col. 1, lines 50-66 through col. 2, lines 1-31; see also Fig. 4, col. 4, lines 22-67 through col. 5, lines 1-13; see further Rangaswamy, US 5,434,210, col. 1, lines 21-32). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ a flocking as taught by Suman into the pump of Bachrach order to reduce fluid leakage as the piston operates.

**Claim 39:** Bachrach, Jackson and Suman teach the limitations of claim 38, discussed previously. Bachrach also discloses a pump wherein a pump chamber is formed radially on the inside by an inner wall (23) formed rotationally fixed with respect to the pump piston.

**Claim 40:** Bachrach, Jackson and Suman teach the limitations of claim 39, discussed previously. Bachrach also discloses a pump wherein a housing outer wall (12) bounding the pump chamber radially on the outside is formed in a fixed manner.

**Claim 41:** Bachrach, Jackson and Suman teach the limitations of claim 39, discussed previously. Bachrach also discloses a pump wherein a housing outer wall (Fig. 4, 11, 13) bounding the pump chamber radially on the outside is movable (removable structure depicted in Fig. 4).

**Claim 42:** Bachrach, Jackson and Suman teach the limitations of claim 39, discussed previously. Bachrach also discloses a pump wherein a further inlet valve is formed in the housing outer wall (Fig. 2, examiner reasons that the inlet valves 31, 37, 43, 49 are "formed" into the outer wall in the sense that the valves include threaded end portions which are placed into the outer wall).

**Claim 43:** Bachrach, Jackson and Suman teach the limitations of claim 39, discussed previously. Bachrach also discloses a pump wherein the pump chamber is bounded in the direction of movement of the pump piston by a fixed housing dividing wall (19a, 20a).

**Claim 44:** Bachrach, Jackson and Suman teach the limitations of claim 37, discussed previously. Bachrach also discloses a pump wherein the outlet valve is formed as a check valve (page 2, lines 1-10).

**Claim 63:** Bachrach, Jackson and Suman teach the limitations of claim 37, discussed previously. Bachrach also discloses a pump wherein a number of outlet valves are disposed next to one another parallel to the direction of rotation (Fig. 2).

Claim 70 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bachrach (US 2,359,819) in view of Jackson (US 1,243,299) and Suman (US 6,688,867) and in further view of Audsley (US 4,028,018).

**Claim 70:** Bachrach, Jackson and Suman teach the limitations of claim 37, discussed previously. Bachrach does not disclose a number of pump housings identically formed such that they can be exchanged for each other. Audsley teaches a number of pump housing identically formed such that they can be exchanged for each

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other (Fig. 6). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ multiple pump housings as taught by Audsley in order to increase pump output.

Claims 37-39, 45-46, 49-51, 57 and 66-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 50060808 ('808) in view of Jackson (US 1,243,299) and Suman (US 6,688,867).

**Claim 37:** '808 discloses a pump comprising at least one pump piston (2) moving on a circular path, and a pump housing (1), the pump piston optionally coupled in a rigid manner to one or more further pump pistons (2), moving in an oscillating manner about an axis of rotation on a path of movement correspondingly having two reversal positions; and furthermore a medium, optionally compressed or pressurized, being discharged via an outlet valve (5) and, in the course of movement from one reversal position into the other reversal position, an inlet valve (4) being opened; after which, in the course of a pressure buildup, the medium is discharged on a pressure side of the pump piston then obtained and taken in on a suction side of the pump piston then obtained, the inlet valve (4) and the outlet valve (5) are associated with the same end region of the path movement (Fig. 1). However, '808 does not disclose inlet/outlet valves formed in a common housing dividing wall. Jackson discloses a pump in which the inlet/outlet valves are formed in a common housing wall (Fig. 1). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ interior valves as taught by Jackson into the pump of '808 in order to protect the valves from being damaged by and to make the entire pump assembly more compact.

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'808 also does not disclose coating the pump with a flocking in the surface area of an associated movement gap. Suman teaches a well-known concept of coating a pump with a flocking in the surface area of an associated movement gap (see col. 1, lines 50-66 through col. 2, lines 1-31; see also Fig. 4, col. 4, lines 22-67 through col. 5, lines 1-13; see further Rangaswamy, US 5,434,210, col. 1, lines 21-32). It would have been obvious at the time the invention was made to a person having ordinary skill in the art to employ a flocking as taught by Suman into the pump of '808 order to reduce fluid leakage as the piston operates.

**Claim 38:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein the inlet valve (9) is run over in the movement from one reversal position into the other reversal position (Drawing 1).

**Claim 39:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein a pump chamber is formed radially on the inside by an inner wall formed rotationally fixed with respect to the pump piston (Drawing 1).

**Claim 45:** '808, Jackson and Suman teach the limitations of claim 39, discussed previously. '808 also discloses a pump wherein a further outlet valve is formed in the pump chamber floor or the pump chamber ceiling or the housing outer wall (5, Drawing 1).

**Claim 46:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein the pump is driven by an electric motor (15).



**Claim 49:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein a drive is performed by means of a crankshaft (Drawing 2).

**Claim 50:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein the drive acts on two or more pumps linked by means of the same crankshaft (Drawing 2).

**Claim 51:** '808, Jackson and Suman teach the limitations of claim 50, discussed previously. '808 also discloses a pump wherein the two pumps driven by the same crankshaft move in opposite directions (Drawing 2).

**Claim 57:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 does not disclose a pump wherein an outlet valve has a mounting foot. Henriksen teaches a mounting foot (112a).

**Claim 66:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein a pump has four pump pistons (Drawing 2) of which two or more respectively move on a common circular path.

**Claim 67:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein two pump pistons moving on a common circular path are respectively disposed in a separate pump housing (Drawing 2).

**Claim 68:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein a common drive is provided for two pump pistons and in that the drive is disposed in a drive housing (15) separate from the pump housing (Drawing 2).

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**Claim 69:** '808, Jackson and Suman teach the limitations of claim 68, discussed previously. '808 also discloses a pump wherein the drive housing (15) is disposed between the pump housings (Drawings 2-3).

Claims 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 50060808 ('808) in view of Jackson (US 1,243,299) and Suman (US 6,688,867).

**Claims 47-48:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 and Jackson teach the claimed invention except for a stepping motor or an electromagnetic oscillating part. It would have been obvious matter of design to select different drive sources, since it appears that the invention would perform equally well with an electric motor.

Claim 54-56 and 58-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 50060808 ('808) in view of Jackson (US 1,243,299) and Suman (US 6,688,867) and in further view of Henriksen (US 5,201,644).

**Claim 54:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. '808 also discloses a pump wherein the inlet valve (4) and the outlet valve (5) is a bending out portion (Drawing 1). However, '808 does not teach a valve with a closure plate. Henriksen teaches a closure plate (112b, 212b). It would be obvious to employ the valve as taught by Henriksen into the pump of '808 in order to fill the dead space present between the working space and valve seat as well as self-center the valve during closing (col. 5, lines 61-68; col. 6, lines 1-2).

**Claim 55:** "808, Jackson, Suman and Henriksen teach the limitations of claim 54. '808 does not disclose a closure plate which merges with a bending-out portion with

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the same diameter. Henriksen teaches a closure plate (212b) with the same width as a bending out portion (212, Fig. 10). Henriksen teaches the claimed invention except for mentioning a diameter. It would have been obvious matter of design to choice to make the valves circular since it appears that the invention would perform equally well with Henriksen's valve shape.

**Claim 56:** "808, Jackson, Suman and Henriksen teach the limitations of claim 54. '808 does not disclose an outlet valve in which closure plates and bending-out portions merge with each other in a coplanar manner. Henriksen teaches a closure plate (112b) merging with the bending out portion (100b) in a coplanar manner (Fig. 7).

**Claim 58:** "808, Jackson, Suman and Henriksen teach the limitations of claim 57. '808 does not disclose a pump wherein the mounting foot merges with a bending-out portion in a coplanar manner Henriksen teaches a mounting foot (112a) merging with a bending-out portion (100a) in a coplanar manner (Fig. 8).

**Claim 59:** "808, Jackson, Suman and Henriksen teach the limitations of claim 54. '808 does not disclose a pump wherein the closure plate rests on a support which is mounted in a clamping manner between the valve and the associated housing part. Henriksen teaches a closure plate which rests on a support (113, 213) and is clamped between the valve and a housing part (see Fig. 1).

**Claim 60:** "808, Jackson, Suman and Henriksen teach the limitations of claim 59. '808, Jackson and Henriksen teach the limitations of claim 60 except for a clamping part. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a clamping part since it was known in the art that pump

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assemblies must be clamped together with some fastener so that they do not fall apart during operation.

**Claim 61:** “808, Jackson, Suman and Henriksen teach the limitations of claim 59. ‘808, Jackson and Henriksen teach the limitations of claim 61 except for a pressure part (35). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a pressure part since it was known in the art that pump assemblies must be clamped together, which clamping causing each part to act upon a neighboring part with pressure, preventing the assembly from coming apart during operation.

**Claim 62:** “808, Jackson, Suman and Henriksen teach the limitations of claim 37. ‘808 does not teach a valve wherein a longitudinal extent runs parallel to the axis of rotation of the pump pistons. Henriksen teaches a valve with a longitudinal extent that runs parallel to a piston axis of rotation (Figs. 1-2).

Claims 64-65 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 50060808 (‘808) in view of Jackson (US 1,243,299) and Suman (US 6,688,867) and in further view of Mosley (US 2,751,146).

**Claim 64:** ‘808, Jackson and Suman teach the limitations of claim 37, discussed previously. However, ‘808 does not disclose a pump with an opening projection associated with the outlet valve. Mosley teaches an opening projection (64; col. 3, lines 65-75). It would be obvious to employ a projection as taught by Mosley into the pump of ‘808 in order to unseat the valve in case the valve becomes stuck (col. 3, lines 72-75).

**Claim 65:** '808, Jackson and Suman teach the limitations of claim 37, discussed previously. However, '808 does not disclose a pump wherein an opening projection is formed as a push rod. Mosley teaches an opening projection formed as a push rod (64; col. 3, lines 65-75). It would be obvious to employ a push rod as taught by Mosley into the pump of '808 in order to unseat the valve in case the valve becomes stuck (col. 3, lines 72-75).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 73-74 are rejected under 35 U.S.C. 102(b) as being anticipated by Longworth (US 435,506).

**Claim 73:** Longworth discloses a pump (Fig. 1), suitable for use as a vacuum pump or compressor, comprising at least one pump piston (D) moving on a circular path, and a pump housing (A), the pump piston, optionally coupled in a rigid manner to one or more further pump pistons, moving in an oscillating manner about an axis of rotation on a path of movement correspondingly having two reversal positions (Figs. 2-3); and furthermore a medium, optionally compressed or pressurized, being discharged via an outlet valve (d) and, in the course of movement from one reversal position into the other reversal position, art inlet valve (c) being opened; after which, in the course of

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a pressure buildup, the medium is discharged on a pressure side of the pump piston then obtained and taken in on a suction side of the pump piston then obtained, the inlet valve and the outlet valve being formed in a common housing dividing wall (Figs. 1-3, curved wall ("strip") on which valves c and d are found), wherein the inlet valve and the outlet valve are associated with the same end region of the path of movement, wherein further, the inlet valve and the outlet valve being provided in an exchangeable valve strip (Examiner broadly views the fasteners which hold the curved wall ("strip") with the rest of the housing indicative of the "strip" being removable) such that an outer-edge disposition of the inlet valve can be switched to an outer-edge disposition of the outlet valve or vice-versa by turning the valve strip around (Figs. 1-3, Examiner notes that the strip could easily be turned around to reverse the valves).

**Claim 74:** Longworth further discloses a pump wherein the valve strip is formed in mirror image with respect to a longitudinal axis with the inlet valves and the outlet valves lying opposite one another with respect to a center longitudinal axis of the valve strip (Examiner notes that an axis passing between valve pair c and valve pair d in Figure 1 satisfies this limitation because the each inlet valve and each outlet valve are opposite another inlet valve and outlet valve, respectively).

### ***Response to Arguments***

Applicant's arguments with respect to claims 37-51 and 54-70 and 73-74 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN ZOLLINGER whose telephone number is 571-270-7815. The examiner can normally be reached on Monday - Thursday, 9 a.m. - 4 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on 571-272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/  
Supervisory Patent Examiner, Art  
Unit 3746

/N. Z./  
Examiner, Art Unit 3746